Challenge TB - Vietnam

Year 2

Annual Report

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Cover photo: Childhood TB patient: Nguyen Hoang Hiep is 8 years old and living in Phu Xuyen district, Hanoi. He had lymph node appeared and enlarged, no fever but weight loss for 6 months before being admitted to the National Lung Hospital on 25 August 2015. Phu Xuyen District Hospital suspected him of tuberculosis lymphadenitis and they referred the patient to the National Lung Hospital (NLH). The patient was diagnosed with tuberculosis lymphadenitis at NLH and started TB treatment with the 2RHZE/4RH regimen. Patient tolerated well to the TB treatment, gained weight and was referred to the local district TB unit to continue his TB treatment and school.

Photo: Dr. Pham Quang Tue, National Lung Hospital – National TB Control Program, Hanoi, Vietnam

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The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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List of Abbreviations and Acronyms

ACSM	Advocacy, communication, social mobilization
AIDS	Acquired Immunodeficiency Syndrome
ART	Anti-Retroviral Treatment
ARV	Anti-retroviral
BDQ	Bedaquiline
CCM	Country coordinating mechanism (Global Fund)
CDC	Centers for Disease Control
CHAI	Clinton Health Access Initiative
CI	confidence interval
CN	Concept Note (Global Fund)
COP16	Country Operational Plan 2016
CSO	Civil Society Organization
CTB	Challenge TB
DLM	Delamanid
DOT	Directly observed treatment
ePMS	electronic Patient Monitoring System
EPTB	Extra pulmonary TB
ERR	Electronic recording and reporting
FHI360	Family Health International
FSW	Female Sex Workers
GDP	Gross Domestic Product
GF	Global Fund
GGE	General Government Expenditure
GGHE	General Government Health Expenditure
GSO	General Statistics Office (of Govt. of Vietnam)
HCMC	Ho Chi Minh City
HCW	Health Care Worker
HIV	Human Immunodeficiency Virus
HSS	Health Statistics Survey
HTC	HIV Testing and Counseling
IDU	Injecting Drug Use
IEC	Information, Education & Communication
KNCV	Koninklijke Nederlandse Centrale Vereniging voor Tuberculosebestrijding
LPA	Line Probe Assay
LTBI	Latent TB Infection
M&E	monitoring and evaluation
MDR-TB	Multi-drug Resistant TB
MMT	Methadone Maintenance Treatment
MOF	Ministry of Finance
MOH	Ministry of Health
MOLISA	Ministry of Labor, Invalids and Social Affairs
MOPS	Ministry of Public Security
MPI	Ministry of Planning and Investment
MSM	Men having Sex with Men
MTB	*Mycobacterium tuberculosis*
NCD	non-communicable diseases
NFM	New Funding Mechanism (Global Fund)
NGO	Non-Governmental Organization
NSP	National Strategic Plan
NTP	National TB Control Program
NTPS	National Tuberculosis Prevalence Survey
OPC	Out Patient Clinic
PAC	Provincial AIDS Center
PATH	Program for Appropriate Technologies in Health
PEPFAR	President's Emergency Plan for Aids Relief

PLHIV	People Living with HIV
PMDT	Programmatic Management of Drug-Resistant TB
PMU	Program Management Unit
PSCM	Procurement & supply chain management
PSM	Procurement & Supply Management
PTB	pulmonary tuberculosis
PWID	People Who Inject Drugs
R&R	Recording & Reporting
SDA	Strategic Development Area
SL-LPA	Second-Line Line Probe Assay
SSW	street-based sex worker
STI	sexually transmitted infections
STTA	Short Term Technical Assistance
SWOT	Strength, Weakness, Opportunity, Threat
TA	Technical Assistance
TB	Tuberculosis
TB/HIV	Tuberculosis and HIV
THE	Total Health Expenditure
TIME	TB Impact Model and Estimates
TOR	Term of reference
USAID	United States Agency for International Development
US-CDC	United States Centers for Disease Control
VAAC	Vietnam Administration for Aids Control
VATLB	Vietnam Association against TB and Lund Diseases
VCT	Voluntary Counseling and Testing
VHW	Village health worker
VINACOMIN	Vietnam Cooperation of Mining and Mineral
VL	viral load
VNSW	Vietnam Network of Sex Workers
VNMSM/TG	Vietnam men having sex with me/trans gender (network)
VNPUD	Viet Nam People Using Drugs
VPP	Voluntary Pooled Procurement
VSTP	Vietnam Stop TB Partnership
VSW	venue-based sex worker
WHO	World Health Organization
XDR-TB	Extensively Drug-Resistant Tuberculosis

1. Executive Summary

The objective of the United States Agency for International Development (USAID)-funded project, Challenge TB (CTB) Vietnam, is to reduce the number of deaths due to tuberculosis (TB) and TB/HIV co-infection by increasing access to timely and quality assured diagnosis and treatment of TB and multidrug-resistant (MDR) TB, especially among vulnerable groups (people living with HIV (PLHIV), children, and prisoners). KNCV Tuberculosis Foundation (KNCV) leads the implementation of the CTB in collaboration with World Health Organization (WHO). The total budget allocated for CTB in the second year was USD 757,522.

The seven technical areas that have been covered by CTB Year 2 in Vietnam are: i) Comprehensive high quality diagnostic network; ii) Patient centered care and treatment; iii) TB infection control; iv) Management of latent TB infection; v) Political commitment and leadership; vi) Comprehensive partnerships and informed community involvement; vii) Quality data, surveillance and monitoring and evaluation (M&E). Several activities of CTB have benefited all 63 provinces across the nation; however, the key focus of the project in Year 2 primarily assisted 15 Provinces (4 HIV and TB high prevalence provinces, 9 MDR-TB treatment centers (provinces), and two PMDT satellite provinces). With this coverage in Year 2, CTB has supported 38.6 million people in 3,232 communes of 193 districts, an equivalent of 39% Vietnam's total population (2013). Additionally, the Project also continued its support for access to the WHO-approved rapid diagnostic platforms in all 54 provinces within the framework of the PMDT of National Tuberculosis Control Program.

The outputs/outcomes from CTB are identified below:

- Building on the previous USAID funded project *TB CARE I*, CTB provided technical assistance (TA) and supervision to the rollout of GeneXpert testing for key affected populations in PMDT provinces. These activities were supporting the National TB Program's (NTP) National Strategic Plan (NSP) and Global Fund's (GF) Concept Note objectives in close coordination with NTP and HIV Program. In addition to the existing 71 GeneXpert systems in 2015, 20 new systems have been provided by GF NFM in 2016. The total number of tests done with GeneXpert since its introduction in 2012 till 30 September 2016 was 85,854. Among these, 7,080 tests were rifampicin resistance. The introduction and scale-up of the GeneXpert platforms provides a tremendous contribution to the diagnosis of MDR-TB in Vietnam (see table 1 for full data to date).

- In follow-up of *TB CARE I* during which TA was provided in 2016 for the development and implementation of a national childhood TB policy based on international policy (WHO and The Union), the project provided TA (international and local) to the roll-out and evaluation of the childhood TB work plan for 2015-2020 in 3 additional provinces (Thai Nguyen, Ninh Binh and Quang Nam) for a total of 12 provinces and countrywide implementation of the Childhood TB contact screening and management component. The Union's online course on Childhood TB and 10 WHO training modules for health care workers was translated into Vietnamese and disseminated on the NTP website aiming to improve the support in training and knowledge transfer on child TB to health care workers at commune, district and provincial levels.

- The scale-up of programs for the Programmatic Management of Drug Resistant TB (PMDT) is well under way in Vietnam. CTB/KNCV continued playing an important role in advising and supporting NTP in terms of policy, workplan development, implementation and quality assessment for PMDT implementation. Vietnam pioneered the Patient Triage approach for rifampicin resistant TB (RR-TB) patients, and, using SL-LPA as the initial diagnostic test for the detection of fluoroquinolone- and second-line injectable resistance. The new TB drug Bedaquiline (BDQ) in line with WHO Interim Policy Guidelines and the shorter regimen (using Levofloxacin) under operations research, have been introduced in the country since November 2015 after the launching session on 25th November 2015. As of September 30, 2016, a cumulative total of 64 pre-XDR and XDR-TB patients in 3 pilot provinces have been triaged and enrolled on BDQ-containing treatment regimens together with repurposed drugs, Linezolid and Clofazimine. Since April 2016, the above-mentioned 3 sites have also been implementing treatment of eligible MDR-TB patients with the shorter 9-month regimen. As of September 30, 2016, 72 MDR-TB patients have been enrolled on this shorter regimen. The routine use of SL-LPA, and these new treatment options are in line with WHO recommendations that

allow patients to receive the most appropriate and least toxic regimens and will greatly contribute to global experience.

- The National TB program is in transitional period in which financing for TB control is being shifted from a national target program to the health insurance program. To ensure the provision of TB diagnosis and treatment for patients, Challenge TB provided financial and technical support to the Ministry of Health to assess TB diagnosis and treatment under health insurance in 5 provinces, followed by the development of new rules governing the provision of health insurance for TB diagnosis and treatment. The new regulations on medical examination and treatment, and the payment of health insurance-related TB diagnosis and treatment took effect on the 1st May 2016. The new rules provide clear guidance on referral procedures towards improving accessibility to TB care services. TB patients can now have shorter waiting times for diagnosis by being referred directly from the commune level to district or provincial TB control facilities. The circular also promotes programmatic management of drug resistant TB by allowing MDR-TB patients to be referred from one province to another province with full health insurance benefits. Health insurance covers Isoniazid preventive therapy (IPT), which was previously not covered. This provision can accommodate the needs of expansion of latent TB infection (LTBI) treatment to further reduce the TB epidemic in Vietnam.

- CTB provided technical assistance to the Vietnam Administration of HIV/AIDS Control (VAAC) and the NTP to support the development of a draft action plan for HIV surveillance after the needs and situational assessment regarding the functioning of the HIV, TB-HIV reporting and recording systems in October 2015. The draft HIV surveillance action plan describes the main activity and several details of the next steps to accomplish this activity. Main activities as drafted in the action plan are: i) electronic Patient Monitoring System (ePMS) implementation; ii) Establish data exchange between ePMS and hospital information systems and the health insurance department; iii) Establish data exchange between ePMS and Vitimes/eTB Manager; iv) ePMS enhancements. The draft action plan describes per activity the organization/person responsible, collaborating partners, requirements, budget, status (e.g., completed, ongoing, outstanding) and a timeline and to be used as a dynamic document where the priorities of the activities are determined and the detailed steps are updated as part of an iterative process.

- CTB provided technical assistance to NTP in the development of the 2nd National TB Prevalence Survey (TBPS) protocol and data management plan. This is an important survey to get a precise estimate of the trend of TB prevalence compared to 2006 and identify novel ways in which TB care and prevention can be improved. CTB also provided technical assistance to NTP in establishing a surveillance system for TB drugs resistance in the country.

2. Introduction

In Vietnam, the allocated budget for Challenge TB (CTB) project in year 2 (1 October 2015 – 30 September 2016 period) was USD 757,522 with two implementing partners (KNCV as lead and WHO as collaborating partner).

The overall strategy of CTB in Vietnam is to develop, pilot and evaluate TB care and prevention innovations that are planned under the National Strategic Plan 2015-2020, in close collaboration with the NTP, VAAC, the USAID Mission and partners. After evaluation and ensuring adjustments, the innovations will be mainstreamed by the NTP with domestic and other donor (mainly GF) resources. This approach was shown to be effective during the previous implemented USAID projects TB CAP and TB CARE I. In this way CTB investments will leverage other resources, while spearheading program innovation. Moreover, CTB will ensure effective use of Global Fund investments, by providing technical assistance to the rollout of the innovations. Evidence will be collected to document the operational processes and their impact.

Challenge TB has been collaborating closely with a network of 15 provincial TB and Lung Disease Hospital. These included 9 MDR-TB treatment centers (including 3 provinces overlapping with high HIV prevalence provinces (Hanoi, Vinh Phuc (National Hospital 74), Thanh Hoa, Da Nang, Binh Dinh, Binh Thuan, Ho Chi Minh City, Can Tho, Tien Giang), two PMDT satellite provinces (Thai Binh and Tay Ninh) and four additional provinces with high prevalence of HIV-infection (Hai Phong, Quang Ninh, Dien Bien and An Giang). The project was thus implemented in support of 38.6 million people in 3,232 communes and 193 districts, an equivalent of 39% of Vietnam's total population (2013). Additionally, the project supported the WHO-approved rapid diagnostics for all 45 provinces within the framework of PMDT. Several activities of CTB have benefited all 63 provinces across the nation.

The seven technical areas that are covered by CTB Year 2 in Vietnam are: i) Comprehensive high quality diagnostic network; ii) Patient centered care and treatment; iii) TB infection control; iv) Management of latent TB infection; v) Political commitment and leadership; vi) Comprehensive partnerships and informed community involvement; vii) Quality data, surveillance and M&E.

CTB is led by KNCV Tuberculosis Foundation (KNCV) with WHO as collaborating partner, in sequence of TB CARE I (2010-2015), TB CAP (2008-2010). Coalition partners FHI 360, MSH and PATH are also active in Vietnam, especially in HIV/AIDS care with other USAID funding. Close coordination of activities with these partners take place. The key partners are involved in the implementation of CTB at Central level including National Tuberculosis Control Program, and the Vietnam Administration of HIV/AIDS Control (VAAC - HIV/AIDS Program). The project has been collaborating closely with a network of 15 provincial TB and Lung Disease Hospitals with focus on PMDT MDR-TB treatment centers (provinces) and provinces with high prevalence of TB and HIV.

3. Country Achievements by Objective/Sub-Objective

Objective 1. Improved Access

Sub-objective 2. Comprehensive, high quality diagnostics

In Sub-objective 2, CTB focuses on 2 main intervention areas: i) 2.4. Access, operation and utilization of rapid diagnostics (i.e. Xpert) ensured for priority populations and 2.7. Bio-safety measures in laboratories ensured.

2.4. Access, operation and utilization of rapid diagnostics (i.e. Xpert) ensured for priority populations

In this fiscal year, CTB continues to provide technical support to NTP in scaling up Xpert MTB\RIF in Vietnam particular for management, coordination, procurement, cartridge supply management system, recording and reporting and technical support at central level for the routine use of Xpert MTB/RIF.

With CTB technical support, NTP\GF NFM procurement of the package of extended warranty for 28 GeneXpert (Xpert) machines, 10 modules and 2 central processing units (CPUs) for in-country stock, 20 new machines and 50.000 Xpert MTB\RIF cartridges were completed in support of GeneXpert roll-out.

In addition to the current 71 GeneXpert systems, 20 new GeneXpert systems were provided to the NTP by GF by the end of September 2016. The installation of these systems is planned in the last quarter of 2016. KNCV local staff will co-facilitate with NTP in trainings on GeneXpert implementation in TB/HIV settings in 13 remaining provinces (21 new GeneXpert platforms) in CTB Year 3. By the end of 2016, a total of 93 NTP GeneXpert systems (91, NTP and 2 outside NTP) will be operational in all 63 provinces.

Table 1. Results of Xpert MTB\RIF implementation in Vietnam

Period	Total tests conducted	Xpert MTB\RIF results									
		MTB(-)		MTB(+)						Error/ indeterminate	
				Sub-total		MTB(+)/R(-)		MTB(+)\R(+)			
	N	n	%	n	%	n	%	n	%	n	%
Jun-Dec 2012	2,152	563	26.2	1,507	70.0	1,110	73.7	397	26.3	82	3.8
2013	7,423	3,010	40.5	4,114	55.4	3,116	75.7	998	24.3	299	4.0
2014	21,799	12,524	57.5	8,309	38.1	6,519	78.5	1,790	21.5	966	4.4
2015	30,138	14,975	49,7	13,910	46,2	11,611	38,5	2299	7,6	1216	4.0
Jan – Jun 2016	25,020	11,383	45.5	13,045	52.1	11,099	85.1	1,946	14.9	591	2.4
Total	86,532	42,455	49.1	40,885	47.2	33,455	81.8	7,430	18.2	3,154	3.6

CTB has contributed to the stable in-country supply of MTB/RIF cartridges through regular review of utilization reports, quantification for orders and shipments, quarterly distribution and reallocation. CTB/KNCV also supported the establishment of and coordination among the NTP's GeneXpert technical assistant team (the first layer) to handle technical problems and maintain well-functioning GeneXpert systems. During Year 2, various minor problems with Genexpert platforms (problems related to maintenance, trouble shooting, module failures and replacement, failures of motherboard, etc.) were effectively handled by through remote consultancy by KNCV technical team members (the second layer). The majority of machines are planned to be calibrated in the last quarter of 2016.

In collaboration with NTP and US\CDC Vietnam, the refresher trainings on advanced GeneXpert with Cepheid trainer were organized in Hanoi and HCMC in September 2016 to develop capacity on maintenance, troubleshooting, calibration, module swapping, etc. for the NTP GeneXpert technical assistance team.

2.7. Bio-safety measures in peripheral laboratories ensured

Bio-safety is improved by several interventions: i) improving laboratory facility layout to ensure minimum requirements for biosafety; ii) providing adequate equipment for ensuring the implementation of requested technical tests, and ensuring specifications and maintenance; and iii) establishing a safe working environment through implementation of standard operational procedures and management activities to ensure bio-safety for all laboratory staff.

With support through TB CAP and TB CARE I in strengthening of biosafety condition of the TB laboratory system, the national legislation on biosafety for laboratories was updated by the MOH's Circular #25 in 2012. This circular came into force by the first of January 2015. All laboratories in the TB laboratory system for diagnosis and monitoring treatment of MDR-TB are now required by law to fit the National Technical Standards on lab practice and bio-safety starting in January 2015. This urges laboratories to invest in biosafety measures. The CTB project will provide TA to this work, while capital investments are covered by domestic (or GF) funding, as these laboratories are of utmost importance to enable expansion of treatment of MDR TB and this TA ensures effectiveness of the investments from GF and the Government of VN. In Year 2, five additional PMDT provinces of Binh Dinh, Bac Ninh, Phu Tho, Lang Son and Ha Nam received TA from CTB to upgrade their laboratory biosafety program The cumulative total of 30 out of the 45 PMDT provinces received TA from CTB to improve biosafety practices and protocols to ensure a safe working environment. Beside laboratories, MDR-TB treatment departments also received local CTB/KNCV TA to improve TB-IC conditions in support of roll out of PMDT.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y2	Y2
	2.1. Access to quality TB diagnosis ensured	2.1.2. A current national TB laboratory operational plan exists and is used to prioritize, plan, and implement interventions.	3 - NTP NSP 2015-2020 including lab component available and approved in Mar 2014 (includes a detailed budget)	NA	NA
	2.2. EQA network for lab diagnostics & services functioning	2.2.6. Number and percent of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e.	0% (0/2) Out of 2 TB Reference laboratories, 0 are performing lab quality management system	NA	NA
		2.2.7. Number of GLI-approved TB microscopy network standards met	Not evaluated (2015)	NA	10/11 (CTB lab workshop in June 2016) All but #8, are met.
	2.3. Access to quality culture/DST ensured	2.3.1. Percent of bacteriologically confirmed TB cases who are tested for drug resistance with a recorded result.	3% (1,702/58,880; NTP 2014)	NA	29% (29,949/ 102,655, NTP 2015, Xpert MTB\RIF test only)
	2.4. Access, operation and utilization of rapid diagnostics (i.e.	2.4.1. GeneXpert machine coverage per population (stratified by Challenge TB, other)	1.4/1 GeneXpert (2014)	1.0M/1 GeneXpert	1.0M/1 GeneXpert

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y2
	Xpert) ensured for priority populations	2.4.2. #/% of Xpert machines that are functional in country (stratified by Challenge TB, other)	100% (2015, 56 machines)	100% (2016, 71 machines)	100% (2016, 71 machines)
	2.7. Bio-safety measures in laboratories ensured	2.7.1. #/% of laboratories implementing national biosafety standards (stratified by laboratories performing culture, DST and Xpert)	25 PMDT provinces (2015)	30 PMDT provinces (APA2, cumulative)	30 PMDT Provinces (APA2 cumulative)

Sub-objective 3. Patient-centered care and treatment

Patient-centered care and treatment is an important sub-objective of the CTB project in support of implementation and roll out of the new WHO policy in management of TB in children, PMDT and introduction of new TB drugs (Bedaquiline) and shorter regimen (9 months) for MDR/XDR-TB treatment, and strengthening of TB/HIV collaborative activities.

3.1 Ensured intensified case finding for all risk groups by all care providers

Management of TB in children

With substantial support from TB CARE I, Vietnam is among the first countries in the world to implement and scale up the WHO recommended strategy in management of TB in children with focus on: i) the implementation of child TB contact screening and management at the communal health care level; ii) Offer isoniazid preventive therapy (IPT) – 6 months of daily isoniazid at 10 mg/kg/day or 6H for child contacts aged <5 and children having HIV (once TB excluded) at communal (primary care) health center level; iii) supporting and improving clinical diagnosis of children with suspected TB at the district hospital level; iv) NTP engage the child health care sector.

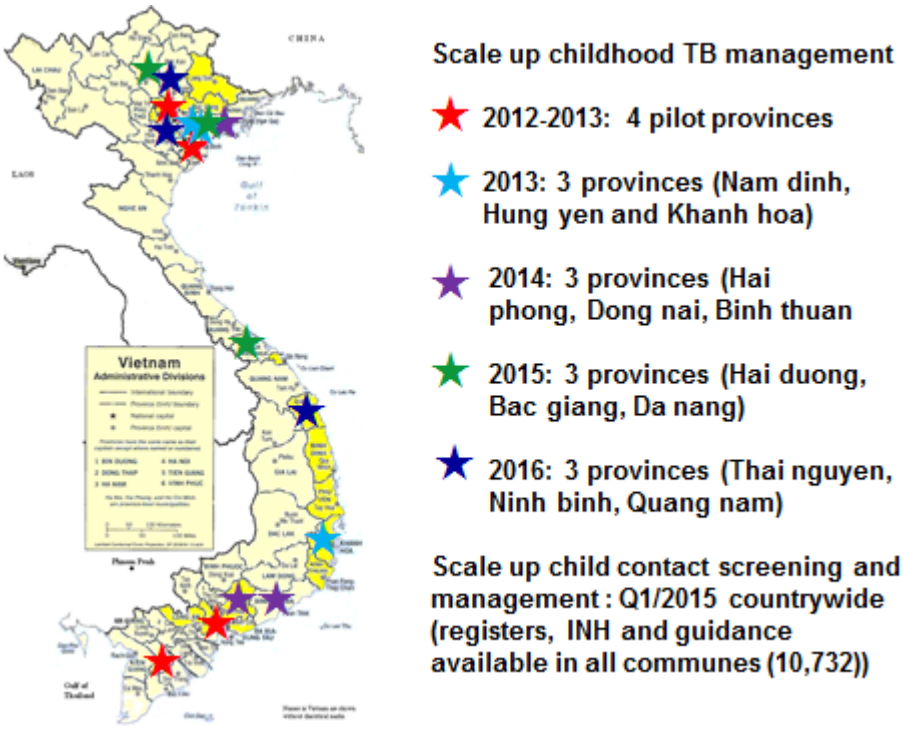
In 2014, with TB CARE I support, the national work plan for roll-out of the strategy in management of TB in children in 2015-2020 period was developed and included in the National Strategic Plan (NSP) for 2015-2020 which has been approved by the MOH and included in the GF Concept Note under the New Funding Model in 2014. With the clear goal, objectives and targets in the national workplan for rollout of the management of TB in children in 2015-2020 period, the new model of the management of TB in children piloted and evaluated in TB CARE I will be rolled out nationwide between 2015-2020. The overall objectives are to strengthen: i) advocacy, communication and social mobilization in childhood TB control; ii) early detection and treatment for childhood TB; iii) child TB contact management; iv) monitoring and evaluation; and v) research. Targets have been set and include: i) increase the proportion of child TB nationally to 6% in 2020; ii) treatment success rate >90% from 2016; and iii) at least 80% eligible child contacts receive IPT.

The CTB project has provided TA to the roll-out and evaluation of the childhood TB work plan for 2015-2020. Under Year 2, CTB provided technical assistance in support of the childhood TB policy roll out to new provinces (Global Fund financed) by CTB country team, and supported short-term technical assistance (STTA) by Professor Steve Graham who has done so earlier during TB CARE I.

A new strategy has been successfully piloted in 4 provinces with high TB and HIV burden since 2012. This new strategy has become a model for the NTP to roll out to 12 other provinces with Global Fund support, including Nam Dinh, Hung Yen and Khanh Hoa (in 2013), Hai Phong, Dong Nai and Binh Thuan (in 2014), Hai Duong, Da Nang and Bac Giang (in 2015) and Thai Nguyen, Ninh Bình and Quang Nam (in 2016) (Figure 1).

With CTB TA, the TB contact screening and management has been implemented nationwide. The NTP distributed the implementation guidelines, forms and registers and INH 50mg to all 10,732 commune health centers in the country in Q1 of 2015.

Figure 1. Scale up of management of TB in children in Vietnam



In 4 pilot provinces, from quarter 4 of 2012 to quarter 1 of 2016, a total of 13,872 children identified as having close contact with sputum-positive patients were screened and registered for management. Of these children, 5,588 (40%) children were eligible for IPT (Table 2). In those eligible, around two-thirds accepted to take IPT with high adherence. (83% in 2012, 87% in 2013-2014 and 93% in Q1 2015). In the same period, 1,000 pediatric patients with TB of all forms were detected and treated.

Table 2. Results of community TB contact screening and TB case detection in 4 pilot provinces in Viet Nam, Q4-2012 – Q1-2016

	2012 Q4	2013	2014	2015	2016 Q1	Total
Child contacts screened	1,084	3,025	4,409	4,483	871	13,872
Child contacts eligible for IPT	339	1,238	1,800	1,849	362	5,588 (40%)
Numbers received IPT (% of eligible)	184 (46%)	764 (62%)	1,164 (65%)	1,568 (85%)	296 (82%)	3,976 (71%)
Numbers completed (%)	153 (83%)	633 (87%)	1,016 (87%)	Q1 2015 data only 379 (93%) of 409		
All child TB cases notified	57	288	286	290	79	1,000
Bacteriologically confirmed PTB	7 (12%)	30 (10%)	55 (19%)	29 (10%)	14 (18%)	135 (13.5%)
Clinically diagnosed Pulmonary TB (PTB)	27	130	134	130	45	466 (46.6%)
Extra-pulmonary TB (EPTB)	23	128	97	131	20	399 (39.9%)

In 9 provinces with funding support from the GF NFM, 6,100 children identified as close contacts with sputum smear positive patients were screened and registered for management in 2015 and Q1 of 2016. Of these children, 3,040 (50%) children were eligible for IPT and 59% of the eligible children accepted to take IPT (Table 3).

The IPT completion rates were 95.6% (842/881) for cohort of 2014 and 91.0% (203/223) for cohort of Q1 2015.

Table 3. Results of community TB contact screening and TB case detection in 9 provinces with the GF NFM support, Q1/2015 – Q1/2016

	2015	2016 Q1	Total
Child contacts screened	5,195	905	6,100
Child contacts eligible for IPT	2,563	477	3,040 (50%)
Numbers received IPT (% of those eligible)	1,474 (58%)	303 (63%)	1,777 (59%)
All child TB cases notified	423	49	472
Bacteriologically confirmed PTB (% total child TB cases)	21	4	25 (5.3%)
Clinically diagnosed PTB	305	22	327 (69.3%)
EPTB	97	23	120 (25.4%)

Since 2011, a senior paediatric TB consultant (Prof. Steve Graham) has been providing STTA on implementation and roll out these novel child TB care and prevention activities in Vietnam. Beside the monitoring and supervision by NTP staff, in September 2016, the consultant, KNCV office staff and NTP carried out a monitoring mission to review progress in the roll-out by NTP to other provinces of the community-based contact screening intervention with field visits in Dong Nai and Bac Giang. Operational issues and techniques in the implementation were discussed and recommended as follows:

- Strengthen links with pediatric services at the provincial and district levels – provincial child TB working groups to support improved diagnosis and case detection and reporting of child TB cases;
- Improve the support in training and knowledge transfer on child TB to the provinces;
- Support operational research projects in selected districts that evaluate symptom screening practices and determine the prevalence of LTBI in household child contacts;
- Disseminate the findings and experience from the piloting of the community-based screening and management;
- Consider the potential for improving access to treatment in young children and monitoring of new child-friendly FDC;

Figure 2. Monitoring visit conducted by Prof. Steve Graham, KNCV and NTP staff on childhood management of TB at commune level in Dong Nai and Bac Giang provinces, from 12-16 September 2016

During Year 2, CTB supported NTP to translate and design the Union's online course on Childhood TB and 10 WHO training modules for health care workers into Vietnamese and disseminate on the NTP website aiming to improve the support in training and knowledge transfer on child TB to health care workers at commune, district and provincial levels.

Systematic TB screening among industrial worker (miners) integrated into occupational health procedures

The small study conducted by WHO in 2013, shows that the TB prevalence is twice as high in coal mining community in Vietnam. As mining corporation provide annual medical check-up including chest X-Ray for their workers, it is a good chance to improve TB detection among mining workers. In Year 2, CTB/WHO supported NTP and Coal and mineral hospital of Vietnam Cooperation of Mining and Mineral (VINACOMIN) to develop a collaborative model. A sensitization meeting between NTP and leader of VINCOMIN was organized and they agreed to include TB screening in their annually medical check-up for their staff. An official letter describing the collaboration was sent to all mining companies in Quang Ninh. A 2-day training on the collaboration model was organized for health workers of five big mining companies, health staff of VINACOMIN and TB staff at province and districts in Quang Ninh. Technical monitoring was provided by district TB staff and coordinating team in Ha Noi.

To date, fives mines have implementing TB screening in annual medical check-up, 3,581 mining workers have had chest X-rays taken; 269 of them had abnormal chest X-rays of which 46 were suggestive TB; only 11 of them were referred for TB diagnosis and 4 of them started TB treatment. We are still working very closely with the NTP at provincial and health facilities of VINACOMIN to ensure all suspected TB cases will be referred to diagnosis and all TB patients will put on treatment.

Furthermore, VINACOMIN sent an official letter to all 21 mining companies under their control in Quang Ninh province to direct integration of TB screening in annual medical check – ups for mining workers using NTP's standard operational procedures.

3.2. Access to quality treatment and care ensured for TB, MDR-TB and TB/HIV for all risk groups by all care providers.

PMDT scale up

CTB/KNCV plays an important role in advising and supporting NTP in terms of policy, workplan development, implementation and quality assessment for PMDT implementation including introduction of new TB drugs and regimens and rollout. In Year 2, CTB focused on 3 STTA missions in support of NTP in PMDT roll-out, implementation of active drug safety monitoring and management (aDSM), particularly for ND & shorter regiments and TB-HIV collaborative activities.

The scale-up of programs for the management of drug resistant TB (DR-TB) is well under way in Vietnam. Increasing numbers of patients with DR-TB are diagnosed and starting treatment, starting from 101 MDR-TB patients in 2009 to 2,131 patients in 2015 . In most countries the scale-up of PMDT implies decentralization of the responsibility for DR-TB treatment to provinces and even districts. DR-TB care is transitioning from often small, hospital-based pilot projects to nationwide management of DR-TB, applying ambulatory models of care with facility based treatment initiation and back-up. During the scale-up, health workers struggled to maintain the quality of care, necessary to make treatment a success. NTP is struggling to organize and maintain the supporting systems for PMDT: laboratory services and sample transportation networks, procurement and supply management for second-line TB (SL-TB) drugs, ancillary drugs, psycho-socio-economic support for patients, psychological support to health care workers, recording and reporting etc. The WHO Second Line TB drug register is an invaluable source of information to assess patient management and identify problems in care delivery. While cohort analysis is being widely used for this goal in basic DOTS programs, in PMDT this has been neglected, resulting in less than comprehensive treatment provision with high rates of treatment interruption. Next to intensifying monitoring and supervision and other interventions aimed at strengthening PMDT, optimization of the use of the SL-TB register at the responsible treatment facility level is needed to improve both patient-relevant outcomes and the reliability of DR-TB data for better PMDT. Doing regular PMDT cohort reviews is the key to early identification of problems in service delivery and for improvement of care.

CTB improves MDR-TB treatment quality by introducing a quarterly interim cohort analysis (QICA) resulting in improvement of patient management and addressing the identified problems in patient management and supportive systems for patients and health workers. In APA1 the QICA method was introduced to NTP and national and regional level NTP supervisors were trained in the method. The NTP plans to include this in their routine program monitoring and supervision activities. Under APA2, CTB monitored and provided TA to its implementation in the three key treatment centers in Hanoi, HCMC and Can Tho, which are also involved in the use of new drugs and shorter MDR regimens. This was done during 2 STTA missions by international consultants and during monitoring and supervision visits by CTB country team. The recommendations/action to be taken/next steps are discussed with NTP leaders and NTP/PMDT team for improvement of MDR-TB treatment quality.

Introduction of new TB drugs and shorter regimen (NDR)

Through the Patient Triage approach, and using SL-LPA as the initial diagnostic test for the detection of FQ- and SLI- resistance among RR-TB patients, as recommended by WHO, the new TB drug, Bedaquiline (BDQ) following the WHO Interim Policy Guidelines, and the shorter regimen under operations research,

have been introduced in the country since November 2015. In APA2, CTB continued to provide TA to NTP in the introduction of ND&R in 3 provinces (Ha Noi, Ho Chi Minh City and Can Tho). The routine use of SL-LPA, and the new treatment options are in line with WHO recommendations that allow patients to receive the most appropriate and least toxic regimens.

Two international missions were conducted in May/June 2016 to provide TA on national guidance on MDR-TB contact investigation; application and outcomes of QICA among enrolled MDR-TB patients; implementation of the diagnostic chain analysis (DCA) and the patient triaging protocol, including implementation of aDSM. Several recommendations were made, including strengthening patient triage, assisting contact investigation, shortening patient waiting time, use of DCA, QICA, the optimal use of e-TB Manager and support for Can Tho in expanding its laboratory services.

As of September 30, 2016, a cumulative total of 64 pre-XDR and XDR-TB patients in 3 pilot provinces have been triaged and enrolled on BDQ-containing treatment regimens. Since April 2016, the above mentioned 3 sites have also been implementing treatment of eligible MDR-TB patients with the shorter 9-month regimen. As of September 30, 2016, 72 MDR-TB patients have been enrolled on this regimen.

Figure 3. The launching session on implementation of a new TB drug (Bedaquiline) and shorter regimen (9 months) for treatment of drug-resistant TB in Vietnam on 25 November 2015 (left: USAID representative – Dr. John Eyres, Director of the Office of Public Health, USAID Vietnam, right: Prof. Nguyen Viet Nhung - NTP Manager, at the event)

Figure 4. CTB TA visit by Dr. Mamel Quelapio and Dr. Edine Tiemersma, KNCV and NTP staff on ND&R in the pilot provinces and visit the patient at home, in June 2016





In collaboration with MOH\NTP, the clinical training on NDR was organized in HCMC, Vietnam on 26-30 September 2016. The participants included around 30 clinical doctors (21 male, 9 female) from Vietnam (central NTP and the three pilot provinces), Myanmar, Indonesia and Cambodia attended the training, during which the use of Bedaquiline and Delamanid, as well as the repurposed drugs Clofazimine and Linezolid, was extensively discussed. Much attention was also given to specific side effects associated with the use of these drugs, especially QT-prolongation, optic and peripheral neuritis, and bone marrow suppression, as these are deemed to be the most significant side-effects. The new shorter regimen was also discussed, together with identifying patients who qualify for this regimen. The WHO Guidelines for M/XDR TB diagnosis and treatment, particularly the recommendation to use SL-LPA as the initial test to detect fluoroquinolone and second-line injectable resistance, the interim policy for the use of the new

drugs, and the latest classification of MDR drugs with inputs from Challenge TB were used throughout the sessions to design regimens, taking into consideration country contexts.

Figure 5: Clinical training on NDR in HCMC, 26-30 September 2016








Strengthen TB-HIV collaboration activities

CTB has provided TA to VAAC in preparation and development of the TB-HIV collaborative framework for the period 2016-2020.

In collaboration with FHI360, VAAC and NTP, CTB provided TA to 2 provinces of Nghe An and Dien Bien to conduct the TB-HIV situation assessment and development of TB-HIV collaborative workplans in April 2016. As part of the workplans, training on TB and HIV for NTP and HIV program staff at district and provincial levels were organized in July 2016 in support the strengthening of comprehensive TB and HIV service delivery in these two provinces.

Figure 6. CTB \ KNCV, FHI360, VAAC, NTP joint assessment of TB-HIV situation in Dien Bien in April 2016

In collaboration with VAAC and NTP, the international TA mission by Dr. Agnes Gebhard and Dr. Mamel Quelapio – KNCV consultant was conducted in July 2016 to assess progress in development of the joint TB-HIV service delivery framework. The consultants visited joint TB-HIV service delivery in 2 provinces of Dien Bien and HCMC and advised the further development of the TB-HIV joint service delivery framework. Several recommendations were made, including rehabilitate districts for decentralized TB care (DB, NA etc.), strengthen TB / HIV cascade cross monitoring (surveillance – targeted supervision) and strengthen the TB program case finding in PLHIV

Figure 7. CTB monitoring visit by Dr. Agnes Gebhard and Dr. Mamel Quelapio, KNCV, VAAC and NTP staff on TB-HIV collaborative activities in Hoc Mon District Health Center, HCMC, 13 July 2016

A new model of TB-HIV integrated service was successfully piloted in 2 two districts of Hung Ha (Thai Binh) and Nho Quan (Ninh Binh). The MOH decided to roll out this model to 13 districts in 5 provinces in 2015 and 30 districts in 7 provinces in 2016 with GF NFM support. In collaboration with VAAC, CTB organized trainings on implementation of TB-HIV integration service delivery for 4 out of 7 provinces in 2016 with 87 staff (42 male, 45 female) from NTP and HIV program at district and provincial levels.

Figure 8. Training on implementation of TB-HIV integration service delivery in HCMC for 3 southern provinces of Binh Duong, Tay Ninh and Can Tho, 15-17 September 2016

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y2
	3.1. Ensured intensified case finding for all risk groups by all care providers	3.1.1. Number and percent of cases notified by setting (i.e. private sector, pharmacies, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach	102,070 (NTP, 2014) The data by settings is not applicable in the NTP surveillance system	NA	102,655 (2015) The data by settings is not applicable in the NTP surveillance system
		3.1.4. Number of MDR-TB cases detected	1,702 (NTP, 2014)	NA	2,558 (NTP, 2015)
		3.1.5. #/% health facilities implementing intensified case finding (i.e. using SOPs)	NA	5 (in pilot area)	5
		3.1.7. Childhood TB approach implemented	2 (2014, childhood TB is an integral part of the NTP strategic plan and regular	3 (2016)	3 (2016)

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y2
			activities in selected provinces)		
		3.1.20 % of occupational health referrals that reach the health facility and are screened for TB Numerator: # of miners that have been referred for TB screening that arrive at the health facility and are screened for TB Denominator: # of miners that have been referred for TB screening	NA	>95% referrals received and screened for TB	100%
	3.2. Access to quality treatment and care ensured for TB, DR TB and TB/HIV for all risk groups from all care providers	3.2.1. Number and percent of TB cases successfully treated (all forms) by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (i.e. gender, children, miners, urban slums, etc.).	45,985/50,264, 91% (NTP, cohort 2013 of new smear positive pulmonary TB patients) The data by settings is not applicable in the NTP surveillance system	NA	45,945/49,938 , 92% (NTP, cohort 2014 of new smear positive pulmonary TB patients) The data by settings is not applicable in the NTP surveillance system
		3.2.4. Number of MDR-TB cases initiating second-line treatment	1,562 (NTP, 2014)	NA	2,131 (NTP, 2015)
		3.2.7. Number and percent of MDR-TB cases successfully treated	498/713, 70% (NTP, cohort 2012)	NA	662/959; 69% (NTP, cohort 2013)
		3.2.14. % of health facilities with integrated or collaborative TB and HIV services	0% for CTB APA1	100% for CTB APA2	100% for CTB APA2

Objective 2. Prevention

Sub-objective 5. Infection control

TB infection control (TB-IC) is an important technical area of focus for the CTB project in support of the roll-out of PMDT at provincial and district levels and TB-HIV integrated service delivery at district level. In APA2, CTB supported NTP and VAAC with strengthening a TB-IC facility program, improving TB-IC in health facilities.

5.1. Compliance with quality TB-IC in health care, community and congregate settings ensured.

A pilot for joint TB/HIV service delivery is ongoing in 2 districts of Nho Quan, Ninh Binh and Hung Ha, Thai Binh (since 2014) with 5 additional provinces (12 districts) in 2015 and 30 districts in 7 provinces in 2016 under the GF NFM concept note. Because people living with HIV (PLHIV) are very vulnerable to the risk of nosocomial TB transmission, coupled with the increasing prelavence of MDR-TB among, PLHIV

as well as the drive towards joint TB/HIV service provision, improving TB infection control in district health facilities is essential.

With TB CARE I support, NTP developed the TB-IC facility improvement program consisting of 3 stages: i) Training on TB-IC knowledge and skills for NTP staff at provincial and district level; ii) TB-IC facility assessment with technical support by higher level (provincial and national levels) and development of TB-IC facility plans; iii) implementation of TB-IC facility plans.

Subsequently, CTB supported, in collaboration with NTP and VAAC, TB-IC trainings for 5 provinces in 2014-2015 for TB and HIV staff (OPC, VCT, methadone clinics) at provincial and district level in Ninh Binh, Thai Nguyen, Ba Ria-Vung Tau, Dong Nai and An Giang.

In APA2, CTB provided technical and financial support to NTP in improvement of TB-IC measures in 8 district health facilities with TB-HIV integrated services. The TBIC measures have been implemented in these 8 districts in support of the roll-out of joint TB-HIV service delivery. Due to delay in establishment of the joint TB-HIV unit at district level, TBIC measures and a TBIC improvement plan haven't been implemented yet in 4 districts in An Giang and Thai Nguyen provinces.

5.2. TB surveillance among HCW ensured

NTP selected 4 indicators for monitoring of TB-IC activities among HCW; % of HCW with TB among all HCW annually, % of health facilities with TB-IC plan, % of health facilities with IC focal person and % of staff caring for MDR-TB patients/working in culture/DST section of laboratory that is provided at least 1 respirator /week. As a stepwise approach, these indicators will be collected in all TB/lung disease hospitals at national and provincial level to NTP's district and commune level and to all facilities (outside NTP). Data collection forms should be developed, pre-tested and adapted by the NTP for each level before including in VITIMES.

The TB-IC data sheets were collected in 67 TB units at national and provincial level and in more than 850 district TB units in 2015. Data will be analyzed and reported in Q4 of 2016.

Table x.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y2	Y2
	5.1. Compliance with quality TB-IC measures in health care, community and congregate settings ensured	5.1.2. #/% of health facilities implementing TB IC measures with Challenge TB support (stratified by TB and PMDT services)	25 MDR treatment departments in PMDT provinces (2015, cumulative)	30 MDR treatment departments (cumulative) in PMDT provinces and 10 TB-HIV district facilities in TB-HIV integrated area (APA2)	30 MDR treatment departments (cumulative) in PMDT provinces and 8 TB-HIV district facilities in TB-HIV integrated area (APA2)
	5.2. TB surveillance among HCW ensured	5.2.1. Status of TB disease monitoring among HCWs	2 (2014)	3 (2015)	3 (2015)
		5.2.3. Number and % of health care workers diagnosed with TB during reporting period	23/7779 (0.3%)	TBD	Data is not available in NTP yet

Sub-objective 6. Management of latent TB infection

In Sub-objective 6, CTB focuses on 3 main activities: i) 6.1.1. TA to develop the guidelines on management of LTBI in all household contacts of TB and MDR-TB patients; ii) 6.1.2. Training on X-ray film reading for radiologists, pediatricians and clinicians at provincial level in all provinces and iii) 6.1.3. CAD4TB validation in Vietnam (Computer Aided Diagnostics for TB - Rapid diagnosis of TB with computerized reading of chest radiographs).

6.1.1. TA to develop the guidelines on management of LTBI in all household contacts of TB and MDR TB patients

Under 3.1, since 2012, with CTB support, management of LTBI in child contacts with pulmonary TB patients has been introduced and scaled up countrywide.

In APA2, CTB provided TA to NTP to adjust and develop the guidelines and SOPs on management of LTBI for contact investigation to include all household contacts of TB and MDR TB patients. The first draft of the guideline was discussed and finalized with CTB consultant (Prof Steve Graham), NTP, HIV program staff and other partners of KNCV, WHO, CHAI in September 2016. The final version will be finalized and available in Q4 2016.

6.1.2. Training on X-ray film reading for radiologists, pediatricians, provincial and district TB staff in all provinces

Chest X-ray is one of the techniques used to support TB diagnosis, especially in high-risk individuals such as people with diabetes, malnutrition and HIV; elderly, children, etc. In Vietnam, X-ray techniques are widely used from central to district levels and patient access is easy. However, X-ray film reading capacity of the NTP staff is limited, particular at provincial and district levels.

In collaboration with NTP and the Image Diagnostic Department of the National Lung Hospital, 5 trainings on X-ray film reading skills were organized, aiming to strengthen the capacity and skills on X-ray film reading for 174 (126 male, 48 female), radiologists, pediatricians, NTP staff in all 63 provinces in the country.

Figure 9. Trainings on X-ray film reading for radiologists, pediatricians, NTP staff in all 63 provinces in the country

6.1.3. CAD4TB validation in Vietnam (Computer Aided Diagnostics for TB - Rapid diagnosis of TB with computerized reading of chest radiographs)

Computer Aided Diagnostics for TB (CAD4TB) – is a software program that allows for rapid screening for pulmonary TB of large numbers of persons. NTP sees a role for CAD4TB in supporting TB diagnosis, specifically for aiding the diagnosis of TB among PLHIV, children and high risk populations (such as prisoners), and in remote areas. However, the software requires digital X-ray equipment, which is currently only available in provincial TB hospitals. It was decided that the implementation of CAD4TB in these risk groups must be further explored. Additional data on the burden of TB in such risk groups will be provided by NTP, CDC, and KNCV, and KCNV will contact the manufacturer and the research group to see if they are interested in collaboration.

Under APA2, CTB worked with NTP and Nijmegen University in the Netherlands (the developer of CAD4TB) to develop the protocol to validate CAD4TB. The validation protocol was reviewed by KNCV technical group at headquarter and presented to NTP. The NTP proposed to conduct this validation in the 2nd TB Prevalence Survey (TBPS). However, the 2nd TBPS is uncertain in funding support and delayed. As a result, this validation was cancelled.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y2	Y2
6.1	LTBI diagnosis and treatment among high risk groups ensured	6.1.11. Number of children under the age of 5 years who initiate IPT	2,134 (2014) (NTP Annual report 2014)	NA	3,390 (NTP data collection for childhood TB 2015)

Objective 3. Strengthened TB Platforms

Sub-objective 7. Political commitment and leadership

7.2. In-country political commitment strengthened

The TB services in Viet Nam are undergoing drastic changes in the National Target Programme and external funding sources. To make the TB program sustainable and to contribute to the Universal Health Coverage, TB diagnostic and treatment services will be covered by the Health Insurance system. The circular on the provision of TB diagnostic and treatment under the National Health Insurance (NHI) prioritizes the accessibility to TB services was issued and took effective in May 2016. CTB is supporting Health Insurance Department (MoH) and NTP in assessing the level and quality of implementation of the circular and revise the circular if necessary to ensure the accessibility of TB patients to HI benefits.

An assessment tool was developed to evaluate implementation of the new circular, to understand the challenges during implementation

The assessment team consists of deputy director of health insurance department, MoH, their specialists and NTP's representative visited 4 provinces (Yen Bai, Quang Ninh, Quang Binh and Ben Tre during Sep – Oct 2016) to assess the implementation of the circular.

The implementation varies among provinces. In province, where TB unit located in district health center, many health staff at district and commune level were not aware of that circular, therefore TB patients have not yet received health insurance benefits when they refer them from commune health post to provincial TB hospital. Another challenge is fragmented policy documents related to referral (for overall patients and for TB patient specific), resulting in difficulty in the implementation. However, in province where TB unit located in district hospital, the circular has been taken effective and patients received health insurance benefit. The assessment team had intensive discussions with department of health of all four provinces, provincial TB hospitals, provincial health insurance and other related staff to urge them to promptly and widely inform the circular to all health staff and to prepare necessary procedures to undertake the circular.

Following assessment missions, a consultative workshop funded by WHO are organized in Ha Noi (Nov 2016). Representative of TB Programme, provincial health insurance came and discuss on the implementation and recommend for further revision of the circular in order to ensure health insurance benefits for TB patients.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y2
	7.2. In-country political commitment strengthened	7.2.3. % of activity budget covered by private sector cost share, by specific activity	NA	NA	NA
		7.2.13. toolkit for assessment developed	No	Yes	Yes

Sub-objective 8. Comprehensive partnerships and informed community involvement

The close involvement of CTB with the NTP and GF and the presence of different international partners in HIV/TB care and prevention require regular project reviews and joint planning necessary, especially when new plans are made. The annual project review and planning working session with participation of the MOH (HIV program), NTP and partners was conducted to discuss NTP and CTB activities in APA2 and to identify the gaps and technical areas to be included in APA3.

KNCV and WHO country staff carried out monitoring and supervision of the CTB project implementation alongside with NTP NSP, and GF NFM implementation.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y2
	8.1.3. Status of National Stop TB Partnership	8.1.3. Status of National Stop TB Partnership	3 (NTP Annual report, 2014)	NA	3 (NTP Annual report, 2015)
		8.1.4. % of local partners' operating budget covered by diverse non-USG funding sources	NA	NA	NA
	8.2. Global Fund grant ratings improved	8.2.1. Global Fund grant rating	A2 (GF, 2014)	NA	NA

Sub-objective 9. Drug and commodity management systems

Due to limited budget, CTB did not invest in this area.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y2
	9.1. Well functioning procurement and supply chain management system in place	9.1.1. Number of stock outs of anti-TB drugs, by type (first and second line) and level (ex, national, provincial, district)	0 (NTP Annual report 2014)	NA	NA

Sub-objective 10. Quality data, surveillance and M&E

This sub-objective focuses on 3 main activities: i) 10.1.1. International TA for further harmonization of HIV-TB R&R systems, VITIMES development and TB, TB-HIV surveillance development; ii) 10.2.1. International and local TA to the 2nd TB Prevalence survey and iii) 10.2.2. International and local TA for the establishment of continuous surveillance system on TB drugs resistance and other ORs

10.1.1. International TA for further harmonization of HIV-TB R&R systems, VITIMES development and TB, TB-HIV surveillance development

Aim is to develop a joint TB/HIV electronic recording and reporting system (through interoperability or integration), that would improve patient relevant outcomes by enabling case-based monitoring of the diagnostic and treatment processes for LTBI, TB and HIV, while supporting service provision by generating accurate health information for management purposes and accurate data for joint TB/HIV surveillance (while safeguarding patients' privacy). The first assessment took place under APA1 funding.

Under APA2, CTB consultant provided technical assistance to the VAAC and the NTP to support the development of a draft action plan for HIV surveillance after the needs assessment and situational assessment regarding the functioning of the HIV, TB-HIV reporting and recording systems in October 2015. Additional activities focused on the indicators for collaborative TB/HIV activities and the interoperability between Vitimes and eTB Manager.

The draft HIV surveillance action plan describes the main activity and details of the steps needed to accomplish this activity. Main steps as drafted in the action plan are:

- ePMS implementation;
- Establish data exchange between ePMS and hospital information systems and the health insurance department;
- Establish data exchange between ePMS and Vitimes/eTB Manager;
- ePMS enhancements.

The action plan describes per activity the organization/person responsible, collaborating partners, requirements, budget, status (e.g. completed, ongoing, outstanding) and a timeline. The action plan is to be used as a dynamic document where the activity priorities are determined and detailed steps updated as part of an iterative process.

10.2.1. International and local TA to the 2nd TB Prevalence survey (TBPS)

In 2006-2007 the first national TB prevalence survey took place, showing a higher than expected TB burden. In the following years additional efforts to increase detection of all forms of TB were implemented, like PPM, PAL, intensified case finding in PLHIV, TB infection control, Childhood TB and active case finding in prisons, while sustaining the routine NTP services and introducing PMDT.

Although a WHO re-estimation of the TB burden in Vietnam was done in January 2013, the current situation is unknown. With Vietnam embarking on an ambitious 15-year plan to reduce the epidemic to a prevalence level of 20/100,000 in 2030, it is important to measure the situation after 10 years. This will serve as an evaluation of the impact of the combination of public health interventions and demographic and socio-economic changes over the past 10 years. It will provide the baseline prevalence and other essential information for the design and funding of the two-phase elimination strategy. With Vietnam aiming to be one of the first Asian countries to go into the TB elimination phase, documenting the Vietnamese experience will be an important contribution to the global elimination effort.

Challenge TB senior consultants provided in APA1 technical assistance to NTP in development of the 2nd National TB Prevalence Survey (TBPS) protocol and data management plan in collaboration with prevalence survey coordinator, data manager and other stakeholders. In APA2, CTB intended to give technical support to finalization of the 2nd TBPS protocol and the pilot, to monitor and ensure quality of data collection and analysis. Funding of the survey is not yet secured, however, as Vietnam is not

allowed to use Global Fund savings of 2015-2016 on its allocation for the TBPS. Therefore, the survey field work has to be postponed.

10.2.2. International and local TA to establishment of continuous surveillance system on TB drugs resistance and other ORs

Vietnam ultimately aims to conduct continuous surveillance of DR-TB for all TB patients. Therefore, it plans to start with sentinel surveillance from 2017 onwards, which will gradually and progressively be rolled out until it includes all TB patients in the country. In APA2, CTB provided TA to NTP to establish the continuous surveillance system on TB drug resistance. The following guiding principles were discussed and agreed upon during the STTA mission of the CTB consultant (30 May – 7 June 2016):

- DR-TB surveillance is not (operational) research, but rather a health system strengthening effort;
- Therefore, a sustainable DR-TB surveillance system will be set up, following the current routine among all groups of presumptive TB cases that are eligible for Xpert testing and expanding access to triaging using LPA or MTBDR*s* (Hain-1 and -2) and FL and SL DST for rifampicin TB patients in all 51 provinces that currently have access to Xpert testing; and expanding access to liquid culture to all pulmonary TB cases (irrespective of smear status), followed by liquid culture-based DST for all TB cases with an MTB+ culture result;
- The system will start with inclusion of public NTP facilities (TB/lung hospitals and DTUs) in four provinces (including one high TB/HIV burden province), and will aim to include all NTP facilities in the coming two years. After this, inclusion of other facilities is envisioned;
- Costs of the system are to be covered by routine funding and in-house IT support for enhancement of the surveillance system is to be arranged;
- The first phase will be a pilot phase in which extra emphasis will be put on getting the system head-started, collecting additional data on presumptive TB case and patient coverage, feasibility, acceptability, and costs, including those of transportation of specimens. This phase will probably be conducted under OR conditions.

With support of CTB, NTP will start protocol and software development in 2016.

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y2	Y2
	10.1. Well-functioning case or patient-based electronic recording and reporting system is in place	10.1.4. Status of electronic recording and reporting system	3 (2014)	NA	NA
	10.2. Epidemiologic assessments conducted and results incorporated into national strategic plans	10.2.1. Standards and benchmarks to certify surveillance systems and vital registration for direct measurement of TB burden have been implemented	Yes (2013) (3 standards were met, 2 were partially met, 6 were not met, and 2 need further assessment)	NA	NA
		10.2.6. % of operations research project funding provided to local partner (provide % for each OR project)	NA	NA	NA
		10.2.7. Operational research findings are used to change policy or practices (ex, change guidelines or implementation approach)	NA	NA	NA

Sub-objective 11. Human resource development

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y2	Y2
	11.1. Qualified staff available and supportive supervisory systems in place	11.1.3. # of healthcare workers trained, by gender and technical area	NA	200	558 (detail in Annex 1, 11.1.1)
		11.1.5. % of USAID TB funding directed to local partners	NA	NA	NA

4. Challenge TB Support to Global Fund Implementation

Current Global Fund TB Grants

Name of grant & principal recipient *(i.e., Tuberculosis NFM - MoH)*	Average Rating*	Current Rating	Total Approved/ Signed Amount**	Total Committed Amount	Total Disbursed to Date
Scaling up MDR TB control and prevention in Vietnam	A2	A1	US$ 39,757,599	US$ 39,757,599	US$ 23,155,712

** Since January 2011*

*** Current NFM grant not cumulative amount; this information can be found on GF website or ask in country if possible.*

In-country Global Fund status - key updates, current conditions, challenges and bottlenecks

- Evaluation of current period:
  - Expenditure rate achieved at 72% because (i) procurement packages were only paid 30-70%, (ii) delayed some activities, (iii) PATH's withdrawal as GF sub recipient, (iv) exchange rate difference between budget and reality.
  - The Grant confirmation was signed on 1 September 2015. After receiving the Grant confirmation, the Government approved the project (5 November). After receiving the Approval Decision from the Government, the MoH organized the review meeting and issued the approval decision on 18 November 2015. In accordance to the policy, the project could only submit the PSM plan to the MoH for approval after receiving the approval decision by the MoH. That's why the project only had the MoH approval for last 6 months of 2015 PSM plan on ending November and then conducted all steps of PSM plan. NTP almost signed contracts with procurement provider in ending December 2015, and transfer the advantages of the procurement packages in ending December. NTP completed all the procurement package in first 6 months of 2016;
  - Regarding programmatic indicators, despite NTP staff's effort, the indicator targets were too high to be achieved although a few of indicators were achieved as committed.
  - Regarding financial performance, BRAVO software was upgraded; however, because of limited time since the GF informed the revised PUDR template, a number of functions have not met requirement. A number of recommendations from the GF have not been fully met, such as, in cash advance, VAT refund on time.

- Difficulties/ Challenges:
  - Ambitious target of MDR-TB enrollment in 2016
  - Expansion of PMDT provinces (infrastructure (laboratory, MDR-TB treatment facility), HR, funding etc…)
  - Policy of no incentives for governmental officers from 2016 onward
  - Low cost norm ((In the GF round 9, NTP used the UN cost norm. In the GF NFM, the NTP was requested to use the Vietnamese cost norm. It is much lower compared with UN one).
  - Priority of high impact interventions, so funding is short for other activities related to training, survey, ACSM, etc.

Challenge TB involvement in GF support/implementation and any actions taken during Year 2

CTB has provided technical support to NTP in the implementation of the GF NFM project in the following main areas:

- PMDT implementation and roll out including introduction of new drug (Bedaquiline) and shorter regimen (9 month regimen)
- Childhood TB implementation and roll out
- Laboratory strengthening
- TB and HIV collaborative activities
- Policy development: A regulatory document for sustaining funding for TB has been issued (the circular No. 4/2016/TT-BYT dated 26 Feb 2016 on regulations on medical examination and treatment, and payment of health insurance-related tuberculosis diagnosis and treatment)

KNCV-HQ has worked with the GFATM Geneva and US\CDC to mobilize funding for the 2nd national TB prevalence survey in Vietnam.

5. Success Story

The success story will be developed and finalized in APA 3.

6. Operations Research

Not applicable - no OR conducted in APA2.

7. Key Challenges during Implementation and Actions to Overcome Them

Challenge	Actions to overcome challenges
Technical	
Limited NTP human resource at central level to support CTB implementation.	CTB has worked with and invited local TA from other institutional organizations (NIHE) and provincial TB hospitals (Hanoi Lung Hospital, PNTH, etc.)
The activity has been involved other sectors than health (mining corporation) and health issues are not their most priority. Therefore, advocacy at higher level with detailed technical preparations are very important to convince them in collaboration.	- Detailed technical preparation based on evidence of high burden TB among mining workers in the previous study - Sensitization meetings with leader of mining corporation (WHO WR met with CEO of the mining corporation) - Close collaboration between NTP central, provincial and mining sector with technical support from WHO
There has been changes in modal of health service delivery at district level in Vietnam (merging again district health center and district hospital), resulting in some delays in the implementation of the circular of health insurance provision for TB diagnosis and treatment	- Field assessment of the implementation - A consultative workshop should be organized to gather all comments/challenges at province and district level. - Clear instruction from Health Insurance Department, MoH to all 63 provincial department of health to urge them implementing the circular

8. Lessons Learnt/ Next Steps

Ensured intensified case finding for all risk groups by all care providers - Management of TB in children:

- Strengthen links with pediatric services at the provincial and district levels; provincial child TB working groups to support improved diagnosis and case detection and reporting of child TB cases
- Improve capacity building on child TB to the provinces
- Support operational research projects in selected districts that evaluate symptom screening practices and determine the prevalence of LTBI in household child contacts
- Disseminate the findings and experience from the piloting of the community-based screening and management
- Consider the potential for improving access to treatment in young children and monitoring of new child-friendly FDC

Ensured intensified case finding for all risk groups by all care providers - Systematic TB screening among industrial worker (miners) integrated into occupational health procedures:
The activity has been involved other sector than health (mining corporation) and health issues are not their most priority. Therefore, advocacy at higher level (WHO WR and CEO of VINACOMIN) with detailed technical preparations are very important to convince them in collaboration. Close collaboration between WHO, NTP and health department of VINACOMIN also contribute to the success of the intervention

Access to quality treatment and care ensured for TB, MDR-TB and TB/HIV for all risk groups by all care providers – Introduction of new TB drugs and shorter regimen (ND&SR). PMDT is one of the most important components in TB control, that consists of 3 parts: detection, treatment and prevention. New TB drugs such as BDQ and the shorter regimen are vital tools for the present and the future in TB care. Lessons learned include the following:

- Successful implementation needs strong commitment of NTP leaders with a capable national Task Force.
- Efficient implementation needs good collaboration with the PV program for quality data collection and adequate ADR management.

In-country political commitment strengthened
There have been changes in the model of health service delivery at district level in Vietnam (merging again district health centers and district hospitals), resulting in some delays in the implementation of the circular of health insurance provision for TB diagnosis and treatment. With limited funding from Government, MoH organized one workshop to disseminate the circular to about 20 among 63 provinces. Field assessment is very important to find out the difficulties of implementation at province, district and commune level. Following the assessment, a consultative workshop of representatives of the remaining provinces (hospital and health insurance) funded by WHO will be organized to gather all comments/challenges, which can help MoH to direct/support DOH in the implementation.

The overall goal of the Challenge TB project is to reduce the number of deaths due to TB and TB/HIV co-infection by increasing access to timely and quality assured diagnosis and treatment of TB and MDR-TB, especially among vulnerable groups (PLHIV, children, etc.).

The overall strategy of CTB in Vietnam is to develop, pilot and evaluate TB care and prevention innovations that are planned under the NSP 2015-2020, in close collaboration with the NTP, VAAC, the USAID Mission and partners. After evaluation and ensuing adjustments, the innovations will be mainstreamed by the NTP with domestic and other donor (mainly GF) resources. This approach was shown to be effective during the previously funded USAID projects TB CAP and TB CARE I implementation. In this way, CTB investments will leverage other resources, while spearheading program innovation. Moreover, CTB will ensure effective use of GF investments, by providing technical assistance to the roll-out of the innovations. Evidence will be collected to document the operational processes and impact.

In APA3, the USAID Mission will focus exclusively on reaching the HIV 90-90-90 targets. Therefore, the APA3 plan is aligned with that ambition and focusing on joint TB/HIV service provision in high HIV prevalent populations, specifically targeting PLHIV, in close collaboration with and alongside the two other USAID funded projects supporting HIV care and prevention, SMART-TA project (ending in September 2016) and SHIFT project (started May 2016). The USAID Mission allocates resources to KNCV as the only CTB implementing partner.

The project work plan was developed based on the NSP 2015-2020 and aligned with the GF NFM concept note 2015-2017, in close collaboration between the NTP (gap analysis, prioritization), USAID country Mission and Washington, KNCV and FHI360 and WHO as important resource partners. The plan is building on the achievements of USAID support through TB CAP, TB CARE I and Challenge TB since 2008. The project will focus on CTB objective 1: "Improved access to quality patient centered TB, TB/HIV and MDR-TB services" with a secondary focus on Objective 2: "Prevention of transmission and disease progression" and Objective 3: "Strengthened TB platforms and health systems strengthening".

The CTB project will provide technical assistance to the NTP and VAAC in the continued development of 2 models for patient-centered comprehensive joint TB/HIV service provision in 3 PEPFAR priority provinces of Dien Bien, Nghe An (TB/HIV Joint Service Delivery model) and HCMC (TB/HIV co-location model) and piloting interventions for scale-up.

The aim is to ensure improved patient-relevant outcomes and a smooth patient flow by appropriate reorganization of joint TB/HIV services, good quality services, in accordance with NTP, and VAAC policies and guidelines and enhanced joint TB/HIV disease surveillance. The results of the pilots will feed into national policy-making for scale-up by NTP and VAAC using domestic and GF resources.

The lifetime of the CTB project largely overlaps with the NSP's and GF NFM's (Round 1 and 2) time frames. Hence, the contribution of the project is expected to assist the NTP and VAAC to achieve the NSP and GF targets, especially the global HIV 90-90-90 targets.

The targets for Challenge TB year 3 under PEPFAR monitoring, evaluation and reporting (MER) indicators in the Country operation plan 2016 (COP16) are as follows:

- Percentage of new and relapsed TB cases with documented HIV status (TB_STAT): Dien Bien (83.3%) and Nghe An (85.0%).
- Percentage of HIV-positive new and relapsed registered TB cases on ART during TB treatment (TB_ART): Dien Bien (90.0%) and Nghe An (90.9%).
- Percentage new and relapsed TB cases received HIV Testing and Counseling (HTC) services for HIV and had their test positive (TB_HTC): Dien Bien (8.0%) and Nghe An (3.9%).

Annex I: Year 2 Results on Mandatory Indicators as well as National Data on the Number of pre-/XDR-TB Cases Started on Bedaquiline or Delamanid

MANDATORY Indicators				
Please provide data for the following mandatory indicators:				
2.1.2 A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions.	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Score as of September 30, 2016	3	N/A	None	
2.2.6 Number and percent of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e. Laboratory Quality Management System	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Number and percent as of September 30, 2016	0% (0/2)	N/A	None	
2.2.7 Number of GLI-approved TB microscopy network standards met	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Number of standards met as of September 30, 2016	Not evaluated	10/11	None	According to the evaluation in the CTB lab workshop in June 201)
2.3.1 Percent of bacteriologically confirmed TB cases who are tested for drug resistance with a recorded result.	National 2015	CTB 2015	CTB APA 2 investment	Additional Information/Comments
Percent (new cases), include numerator/denominator	NA	NA	limited	CTB provided TA only (*): Xpert MTB\RIF test only
Percent (previously treated cases), include numerator/denominator	NA	NA		
Percent (total cases), include numerator/denominator	29% (29,949/102,655)	58% (*) (24602/42460)		

3.1.1. Number and percent of cases notified by setting (i.e. private sector, pharmacies, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach	National APA2	CTB APA2	CTB APA 2 investment	Additional Information/Comments
Number and percent	*Fill in data in "Ind 3.1.1 - APA 2" worksheet*	*Fill in data in "Ind 3.1.1 - APA 2" worksheet*	None	
3.1.4. Number of RR-TB or MDR-TB cases notified	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Total 2015	2,558	NA	Limited	
Jan-Mar 2016	818	NA		
Apr-June 2016	674	NA		
Jul-Sept 2016	NA	NA		
To date in 2016	1492	0		
3.2.1. Number and percent of TB cases successfully treated (all forms) by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (i.e. gender, children, miners, urban slums, etc.).	National 2014 cohort	CTB 2014 cohort	CTB APA 2 investment	Additional Information/Comments
Number and percent of TB cases successfully treated in a calendar year cohort	45,945/49,938 92% (NTP, cohort 2014)	NA	None	
3.2.4. Number of patients started on MDR-TB treatment	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Total 2015	2131	NA	Limited	
Jan-Mar 2016	563	NA		
Apr-June 2016	657	NA		
Jul-Sept 2016	488	NA		
To date in 2016	1708	0		
3.2.7. Number and percent of MDR-TB cases successfully treated	National 2013 cohort	CTB 2013 cohort	CTB APA 2 investment	Additional Information/Comments

Number and percent of MDR-TB cases successfully treated in a calendar year cohort	662/959, 69% (NTP cohort 2013)	NA	Limited	
5.2.3. Number and % of health care workers diagnosed with TB during reporting period	National 2015	CTB 2015	CTB APA 2 investment	Additional Information/Comments
Number and percent reported annually	U	U	Limited	
6.1.11. Number of children under the age of 5 years who initiate IPT	National 2015	CTB 2015	CTB APA 2 investment	Additional Information/Comments
Number reported annually	3,390	1,568	Limited	
7.2.3. % of activity budget covered by private sector cost share, by specific activity	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Percent as of September 30, 2016 (include numerator/denominator)	N/A	NA	None	
8.1.3. Status of National Stop TB Partnerships	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Score as of September 30, 2016	3	N/A	None	
8.1.4. % of local partners' operating budget covered by diverse non-USG funding sources	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Percent as of September 30, 2016 (include numerator/denominator)	N/A	NA	None	No local Partners
8.2.1. Global Fund grant rating	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Score as of September 30, 2016	A1	N/A	Limited	
9.1.1. Number of stock outs of anti-TB drugs, by type (first and second line) and level (ex, national, provincial, district)	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Number as of September 30, 2016	0	0	Limited	NTP performance review report 2015
10.1.4. Status of electronic recording and reporting system	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments

Score as of September 30, 2016	3	N/A	Limited	
10.2.1. Standards and benchmarks to certify surveillance systems and vital registration for direct measurement of TB burden have been implemented	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Yes or No as of September 30, 2016	No	N/A	None	
10.2.6. % of operations research project funding provided to local partner (provide % for each OR project)	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Percent as of September 30, 2016 (include numerator/denominator)	N/A	NA	None	Currently no collaboration exists with local research partners. Challenge TB however closely collaborates with the VN Universities for capacity building and joint activities in support of operational research in VN
10.2.7. Operational research findings are used to change policy or practices (ex, change guidelines or implementation approach)	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Yes or No as of September 30, 2016	N/A	NA	None	

11.1.3. Number of health care workers trained, by gender and technical area	CTB APA 2		CTB APA 2 investment	Additional Information/Comments
	# trained males APA 2	# trained females APA 2	Total # trained in APA 2	Total # planned trainees in APA 2
1. Enabling environment	0	0	0	0
2. Comprehensive, high quality diagnostics	0	0	0	0
3. Patient-centered care and treatment	191	193	384	137
4. Targeted screening for active TB	0	0	0	0
5. Infection control	0	0	0	0
6. Management of latent TB infection	126	48	174	63
7. Political commitment and leadership	0	0	0	0

8. Comprehensive partnerships and informed community involvement	0	0	0	0
9. Drug and commodity management systems	0	0	0	0
10. Quality data, surveillance and M&E	0	0	0	0
11. Human resource development	0	0	0	0
Other (explain)	0	0	0	0
Other (explain)	0	0	0	0
Grand Total	317	241	558	200
11.1.5. % of USAID TB funding directed to local partners	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Percent as of September 30, 2016 (include numerator/denominator)	N/A	NA	None	Challenge TB is working with many local governmental partners, who are not directly paid by the project

Year/Quarter	Number of pre-/XDR-TB cases started on BDQ nationwide	Number of pre-/XDR-TB cases started on DLM nationwide	CTB APA 2 investment	Additional Information/Comments
Total 2014	NA	NA	**Limited**	Data in the table is collected from 3 pilot provinces
Total 2015	3	NA		
Jan-Mar 2016	21	NA		
Apr-Jun 2016	19	NA		
Jul-Sep 2016	24	NA		
To date in 2016	64	0		

Number and percent of cases notified by setting (i.e. private sector, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach (CI/ACF/ICF) (3.1.1)							
		Reporting period					CTB APA 2 investment
		Oct-Dec 2015	Jan-Mar 2016	Apr-Jun 2016	Jul-Sept 2016 (*)	Cumulative Year 2	
Overall CTB geographic areas	TB cases (all forms) notified per CTB geographic area *(List each CTB area below - i.e. Province name)*						Limited
	Hanoi	1,109	874	1,241		3,224	
	Vinh Phuc	61	58	46		165	
	Thai Binh	303	386	397		1,086	
	Quang Ninh	296	325	382		1,003	
	Dien Bien	34	20	46		100	
	Thanh Hoa	706	612	835		2,153	
	Da Nang	389	353	444		1,186	
	Binh Dinh	359	366	431		1,156	
	Binh Thuan	405	407	398		1,210	
	Tay Ninh	515	474	524		1,513	
	HCMC	4,061	3,596	4,574		12,231	
	An Giang	989	1051	1116		3156	
	Can Tho	450	492	552		1494	
	Tien Giang	417	562	512		1491	
	TB cases (all forms) notified for all CTB areas	10094	9576	11498	0	31168	
	All TB cases (all forms) notified nationwide (denominator)	24597	23386	27122		75105	
	% of national cases notified in CTB geographic areas	41%	41%	42%	#DIV/0!	41%	

(*) The data in Jul-Sep 2016 is not available yet in the NTP routine RR/surveillance system

Annex II: Status of EMMP activities

Year 2 Mitigation Measures	Status of Mitigation Measures	Outstanding issues to address in Year 3	Additional Remarks
Not applicable - no specific mitigation measure applied in APA2		NA	